

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-15 (Canceled).

Claim 16 (New): An automatic method for learning frequent chronicles in an alarm log, the alarms being associated with a plurality of events with a plurality of types, the method comprising:

a) automatic selection and grouping of alarm sequences in the alarm log so as to form groups of similar alarm sequences;

b) automatic generation of a partial alarm log for each group of similar alarm sequences obtained in operation a), starting from alarms belonging to sequences of the respective group; and

c) automatic learning of frequent chronicles in each partial alarm log obtained in operation b) so as to generate a partial set of frequent chronicles for each partial alarm log obtained in operation b), and production of a set of frequent chronicles in the alarm log starting from frequent chronicles in each of the partial sets of frequent chronicles obtained.

Claim 17 (New): A method according to claim 16, in which alarm sequences are automatically selected by automatic breakdown of the alarm log into parts in operation a), each part being formed of alarms in the alarm log for which occurrence dates are ordered in time and are included between a start date and end date associated with this part of the log, each part of the alarm log defining a selected alarm sequence for which the alarms belong to this part.

Claim 18 (New): A method according to claim 17, in which the breakdown of the alarm log into parts is such that any alarm in the alarm log belongs to at least one of the parts of the alarm log.

Claim 19 (New): A method according to claim 18, in which automatic grouping of alarm sequences is made in operation a), using a grouping method to form groups of similar alarm sequences.

Claim 20 (New): A method according to claim 19, in which the groups of similar alarm sequences are formed in operation a), by:

representing each of the alarm sequences in the alarm log by its content, based on a set of alarm types with A elements taken from among distinct alarm types in the alarm log, with a number greater than or equal to A , in an alarm sequence representation space with dimension A ; and

automatically grouping alarm sequences in the alarm log and in the alarm sequence representation space, so as to form groups of similar alarm sequences.

Claim 21 (New): A method according to claim 20, in which each alarm sequence selected in operation a) is represented in the representation space with dimension A , by a point with A coordinates, the coordinate with rank j , where j is any integer index between 1 and A , is equal to a number of times the alarm type associated with index j appears in the alarm sequence.

Claim 22 (New): A method according to claim 19, in which groups of similar alarm sequences are formed in operation a) by:

automatically grouping alarm types in the alarm log so as to form groups of similar alarm types, the result of grouping being a number S of groups of alarm types;

representing each alarm sequence in the alarm log by its content based on S' groups of alarm types obtained in the previous automatic groupers, where the number S' is less than or equal to S , in an alarm sequence representation space with dimension S' ; and

automatically grouping alarm sequences in the alarm log in the alarm sequence representation space, so as to form groups of similar alarm sequences.

Claim 23 (New): A method according to claim 18, in which the groups of similar alarm sequences formed in operation a) are formed by:

automatically grouping alarm types in the alarm log so as to form groups of similar alarm types, the result of grouping being a number S of groups of alarm types; and

representing each alarm sequence in the alarm log by its content based on S' groups of alarm types, where the number S' is less than or equal to S obtained in the previous automatic groupers, in an alarm sequence representation space with dimension S' ; and

automatically forming groups of similar sequences in the alarm log, each group of similar sequences being associated with a group of alarm types and resulting from the selection of alarm sequences in the alarm log for which the content of alarms of the same type in the group of types considered exceeds a given threshold for this group.

Claim 24 (New): A method according to claim 22 in which the automatic grouping of alarm types in operation a) to form groups of similar alarm types, is made using a grouping method.

Claim 25 (New): A method according to claim 23 in which the automatic grouping of alarm types in operation a) to form groups of similar alarm types, is made using a grouping method.

Claim 26 (New): A method according to claim 24, in which automatic grouping of similar alarm types in the alarm log in operation a), is made using a grouping method based on a semantic map of alarm types.

Claim 27 (New): A method according to claim 25, in which automatic grouping of similar alarm types in the alarm log in operation a), is made using a grouping method based on a semantic map of alarm types.

Claim 28 (New): A method according to claim 24, in which automatic grouping of similar alarm types in the alarm log in operation a) is made using a grouping method based on an accumulation profile for each alarm type in time, in the alarm log.

Claim 29 (New): A method according to claim 25, in which automatic grouping of similar alarm types in the alarm log in operation a) is made using a grouping method based on the accumulation profile for each alarm type in time, in the alarm log.

Claim 30 (New): A method according to claim 28, in which learning on partial alarm logs obtained in operation b) is made in series, in operation c).

Claim 31 (New): A method according to claim 29, in which learning on partial alarm logs obtained in operation b) is made in series, in operation c).

Claim 32 (New): A method according to claim 28, in which learning on partial alarm logs obtained in operation b) is made in parallel, in operation c).

Claim 33 (New): A method according to claim 29, in which learning on partial alarm logs obtained in operation b) is made in parallel, in operation c).

Claim 34 (New): A method according to claim 19, in which:

- a maximum duration T of chronicles to be learned in step operation c) is fixed;
- in operation a), the difference between the end date and the start date of any part of the alarm log is equal to $2 \cdot T$, and, the parts are broken down in the alarm log such that for any given part with start date D' , the part for which the subsequent start date D'' is closest to D' , if it exists, is such that its start date D'' is equal to the date D' plus T , and, the alarm sequences obtained in the alarm log are grouped automatically using an algorithm based on Kohonen self-organizing maps; and
- in operation b), a partial alarm log is produced for each group of similar alarm sequences obtained in operation a), from the union of alarm sequences in the group, of similar alarm sequences; and
- in operation c), the FACE learning system is used for automatically learning the chronicles.

Claim 35 (New): A system for automatic learning of frequent chronicles in an alarm log comprising:

means for acquisition of alarms and generation of an alarm log starting from acquired alarms, each alarm being associated with one event from among a plurality of types and an occurrence date;

means for transmission of the alarm log and chronicle learning means for using an automatic method for learning frequent chronicles in an alarm log, with frequencies greater than or equal to an adjustable minimum frequency threshold and an adjustable maximum duration, and that can transmit the chronicles obtained;

an alarm sequence selection and grouping module configured to receive an alarm log and to select and group sequences of alarms in the alarm log, and configured to form a group of similar alarm sequences and to transmit this group;

a module for producing a partial alarm log starting from the alarms of a group of similar alarm sequences received from the module that selects and groups alarm sequences in the alarm log, the module configured to transmit the partial alarm log obtained to the chronicle learning means; and

a module for producing a set of frequent chronicles in the alarm log, from chronicles transmitted by chronicle learning means, the module configured to transmit chronicles from the set of frequent chronicles.